



Nucleotide and Amino Acid Sequences of Rat HICP

GACGCTTCTG	ATCTCCAGAG	GACCCTGGGG	TGGGACAGGG	GCCTTGGCAA	GGCTGCAGCC	60
GCTGGGCAGT	GGCTTGAAT	GGAGGTCTTT	ATTACTGGGA	ACTGAGGAGC	TAAGAGGCTC	120
CTGTCAGCTT	GTCCTAAAGT	CTTAGCACTT	GTGGTGGCTT	GGGCTTCACA	CACTGTCAGA	180
CACCTTCGTG	GTGGCCTCCA	CGGCCTCACC	TTCAGGTTTG	AAGCTGGCTC	CACAAGGGAC	240
ACGGTGAC	ATG AGG GGC AGC CCA CTG ATC CAT CTT CTG GCC ACT TCC TTC					290
Met Arg Gly Ser Pro Leu Ile His Leu Leu Ala Thr Ser Phe						
1	5	10				
CTC TGC CTT CTC TCA ATG GTG TGT GCC CAG CTG TGC CGG ACA CCC TGT						338
Leu Cys Leu Leu Ser Met Val Cys Ala Gln Leu Cys Arg Thr Pro Cys						
15	20	25	30			
ACC TGT CCT TGG ACA CCA CCC CAG TGC CCA CAG GGG GTA CCC CTG GTG						386
Thr Cys Pro Trp Thr Pro Pro Gln Cys Pro Gln Gly Val Pro Leu Val						
35	40	45				
CTG GAT GGC TGT GGC TGC TGT AAA GTG TGT GCA CGG AGG CTG GGG GAG						434
Leu Asp Gly Cys Gly Cys Lys Val Cys Ala Arg Arg Leu Gly Glu						
50	55	60				
TCC TGC GAC CAC CTG CAT GTC TGC GAC CCC AGC CAG GGC CTG GTT TGT						482
Ser Cys Asp His Leu His Val Cys Asp Pro Ser Gln Gly Leu Val Cys						
65	70	75				
CAG CCT GGG GCA GGC CCT GGC GGC CAT GGG GCT GTG TGT CTC TTG GAT						530
Gln Pro Gly Ala Gly Pro Gly His Gly Ala Val Cys Leu Leu Asp						
80	85	90				
GAG GAT GAC GGT AGC TGT GAG GTG AAT GGC CGC AGG TAC CTG GAT GGA						578
Glu Asp Asp Gly Ser Cys Glu Val Asn Gly Arg Arg Tyr Leu Asp Gly						
95	100	105	110			
GAG ACC TTT AAA CCC AAT TGC AGG GTC CTG TGC CGC TGT GAT GAC GGT						626
Glu Thr Phe Lys Pro Asn Cys Arg Val Leu Cys Arg Cys Asp Asp Gly						
115	120	125				
GGC TTC ACC TGC CTG CCG CTG TGC AGT GAG GAT GTG CGG CTG CCC AGC						674
Gly Phe Thr Cys Leu Pro Leu Cys Ser Glu Asp Val Arg Leu Pro Ser						
130	135	140				
TGG GAC TGC CCA CGC CCC AAG AGA ATA CAG GTG CCA GGA AAG TGC TGC						722
Trp Asp Cys Pro Arg Pro Lys Arg Ile Gln Val Pro Gly Lys Cys Cys						
145	150	155				
CCC GAG TGT GTA TGT GAC CAG GGA GTG ACA CCG GCG ATC CAG CGC TCC						770
Pro Glu Trp Val Cys Asp Gln Gly Val Thr Pro Ala Ile Gln Arg Ser						
160	165	170				
ACG GCG CAA GGA CAC CAA CTT TCT GCC CTT GTC ACT CCT GCC TCT GCT						818
Thr Ala Gln Gly His Gln Leu Ser Ala Leu Val Thr Pro Ala Ser Ala						
175	180	185	190			
GAT GCT CCT TGT CCA AAT TGG AGC ACA GCC TGG GGC CCC TGC TCA ACC						866

FIGURE 1

Nucleotide Sequence Encoding Mature HICP and the Amino Acid Sequence of Mature HICP

CAG CTG TGC CGG ACA CCC TGT ACC TGT CCT TGG ACA CCA CCC CAG TGC Gln Leu Cys Arg Thr Pro Cys Thr Cys Pro Trp Thr Pro Pro Gln Cys 1 5 10 15	48
CCA CAG GGG GTA CCC CTG GTG CTG GAT GGC TGT GGC TGC TGT AAA GTG Pro Gln Gly Val Pro Leu Val Leu Asp Gly Cys Gly Cys Cys Lys Val 20 25 30	96
TGT GCA CGG AGG CTG GGG GAG TCC TGC GAC CAC CTG CAT GTC TGC GAC Cys Ala Arg Arg Leu Gly Glu Ser Cys Asp His Leu His Val Cys Asp 35 40 45	144
CCC AGC CAG GGC CTG GTT TGT CAG CCT GGG GCA GGC CCT GGC GGC CAT Pro Ser Gln Gly Leu Val Cys Gln Pro Gly Ala Gly Pro Gly Gly His 50 55 60	192
GGG GCT GTG TGT CTC TTG GAT GAG GAT GAC GGT AGC TGT GAG GTG AAT Gly Ala Val Cys Leu Leu Asp Glu Asp Asp Gly Ser Cys Glu Val Asn 65 70 75 80	240
GGC CGC AGG TAC CTG GAT GGA GAG ACC TTT AAA CCC AAT TGC AGG GTC Gly Arg Arg Tyr Leu Asp Gly Glu Thr Phe Lys Pro Asn Cys Arg Val 85 90 95	288
CTG TGC CGC TGT GAT GAC GGT GGC TTC ACC TGC CTG CCG CTG TGC AGT Leu Cys Arg Cys Asp Asp Gly Gly Phe Thr Cys Leu Pro Leu Cys Ser 100 105 110	336
GAG GAT GTG CGG CTG CCC AGC TGG GAC TGC CCA CGC CCC AAG AGA ATA Glu Asp Val Arg Leu Pro Ser Trp Asp Cys Pro Arg Pro Lys Arg Ile 115 120 125	384
CAG GTG CCA GGA AAG TGC TGC CCC GAG TGG GTA TGT GAC CAG GGA GTG Gln Val Pro Gly Lys Cys Cys Pro Glu Trp Val Cys Asp Gln Gly Val 130 135 140	432
ACA CCG GCG ATC CAG CGC TCC ACG GCG CAA GGA CAC CAA CTT TCT GCC Thr Pro Ala Ile Gln Arg Ser Thr Ala Gln Gly His Gln Leu Ser Ala 145 150 155 160	480
CTT GTC ACT CCT GCC TCT GCT GAT GCT CCT TGT CCA AAT TGG AGC ACA Leu Val Thr Pro Ala Ser Ala Asp Ala Pro Cys Pro Asn Trp Ser Thr 165 170 175	528
GCC TGG GGC CCC TGC TCA ACC ACC TGT GGG CTG GGC ATA GCC ACC CGA Ala Trp Gly Pro Cys Ser Thr Thr Cys Gly Leu Gly Ile Ala Thr Arg 180 185 190	576
GTG TCC AAC CAG AAC CGA TTC TGC CAA CTG GAG ATC CAA CGC CGC CTG Val Ser Asn Gln Asn Arg Phe Cys Gln Leu Glu Ile Gln Arg Arg Leu 195 200 205	624
TGT CTG CCC AGA CCC TGC CTG GCA GCC AGG AGC CAC AGC TCA TGG AAC Cys Leu Pro Arg Pro Cys Leu Ala Ala Arg Ser His Ser Ser Trp Asn 210 215 220	672

FIGURE 2

AGT GCT TTC
Ser Ala Phe
225

681

FIGURE 2 (Continued)

Alignment of the Modular Domains of HICP with the Modular Domains of Other CCN Family Members

MODULE I : IGFBP Domain		MODULE II : vWFC Domain										MODULE III : tSP1 Domain																									
1	HICP	QLCCKTPCT--CP-WTPPPQC	45	46	60	61	75	76	90	91	100	1	HICP	QDCSAQCQ--CAAEAAAPHC	45	46	60	61	75	76	90	91															
2	CTGF	QDCSAQCQ--CAAEAAAPHC	-PQGVPLVLDGCGCC	KVCAKQLGEELCTERD	PCDPHKGLFCDFGSP	ANRKIGVCTA	2	CTGF	-PAGVSLVLDGCGCC	RVCAKQLGEELCTERD	PCDPHKGLFCDFGSP	ANRKIGVCTA	3	NOV	LRCPSRCPPKCPSS-PTC	AP-GVRSVLDGCSCC	PVCARQRGESCCSEMR	PCDQSSGGLYCDRSAD	PNNQQTGICMV	3	NOV	AP-GVGLVRUGCGCC	KVCAKQLNEDCSKRTQ	PCDHTKGLECNFGAS	STALKGICRA	4	CYR61	-TCPAAACH--CPLEA-PKC	***	***	***	***	***	***	***	***	***
1	HICP	DDGSCEVNNGRRYLDGETFKP	101	102	120	121	135	136	150	151	180	1	HICP	DDGSCEVNNGRRYLDGETFKP	101	102	120	121	135	136	150	151	180														
2	CTGF	DGAPCVFGGSVYRSGESFQS	101	102	120	121	135	136	150	151	180	2	CTGF	DGAPCVFGGSVYRSGESFQS	101	102	120	121	135	136	150	151	180														
3	NOV	EGDNCVFDGVIYRNGEKFEP	101	102	120	121	135	136	150	151	180	3	NOV	EGDNCVFDGVIYRNGEKFEP	101	102	120	121	135	136	150	151	180														
4	CYR61	EGRPCEYNSRIYQNGESFQP	101	102	120	121	135	136	150	151	180	4	CYR61	EGRPCEYNSRIYQNGESFQP	101	102	120	121	135	136	150	151	180														
1	HICP	PCPNW ST W CG	240	240	250	250	265	265	280	280	298	1	HICP	PCPNW ST W CG	240	240	250	250	265	265	280	280	298														
2	CTGF	NCLVQTTTEWS	1	1	PCSIIT'CGI.GIATRVS	NQNRFQCLEIQRRRLC	LPRPCLAA RS HSSWNSAF-	2	CTGF	ACSKTCGMGIISTRVT	NDNTFCRLEKQSRLC	MVRPCEADLEENIK-KGKK	2	CTGF	NCLVQTTTEWS	1	1	PCSIIT'CGI.GIATRVS	NQNRFQCLEIQRRRLC	LPRPCLAA RS HSSWNSAF-	2	CTGF	ACSKTCGMGIISTRVT	NDNTFCRLEKQSRLC	MVRPCEADLEENIK-KGKK												
3	NOV	NCIEQTTTEWS	2	2	ACSKSCGMGVISTRVT	NRRQCEMVKQTRLC	IVRPCEQEPEEVTDKKGKK	3	NOV	ACSKSCGMGVISTRVT	NRRQCEMVKQTRLC	IVRPCEQEPEEVTDKKGKK	3	NOV	NCIEQTTTEWS	2	2	ACSKSCGMGVISTRVT	NRRQCEMVKQTRLC	IVRPCEQEPEEVTDKKGKK	3	NOV	ACSKSCGMGVISTRVT	NRRQCEMVKQTRLC	IVRPCEQEPEEVTDKKGKK												
4	CYR61	KCIVQTTTEWS	4	4	QCSKSCGTGISTRVT	NONPECRLVKETRIC	EVRPCGGQPVYSSLUK-KGKK	4	CYR61	KCIVQTTTEWS	NONPECRLVKETRIC	EVRPCGGQPVYSSLUK-KGKK	4	CYR61	KCIVQTTTEWS	4	4	QCSKSCGTGISTRVT	NONPECRLVKETRIC	EVRPCGGQPVYSSLUK-KGKK	4	CYR61	KCIVQTTTEWS	NONPECRLVKETRIC	EVRPCGGQPVYSSLUK-KGKK												

FIGURE 3

Northern Blot Analysis of HICP Expression in Rat Aorta Smooth Muscle Cells



FIGURE 4

DNA Synthesis in Rat Aorta Smooth Muscle Cells

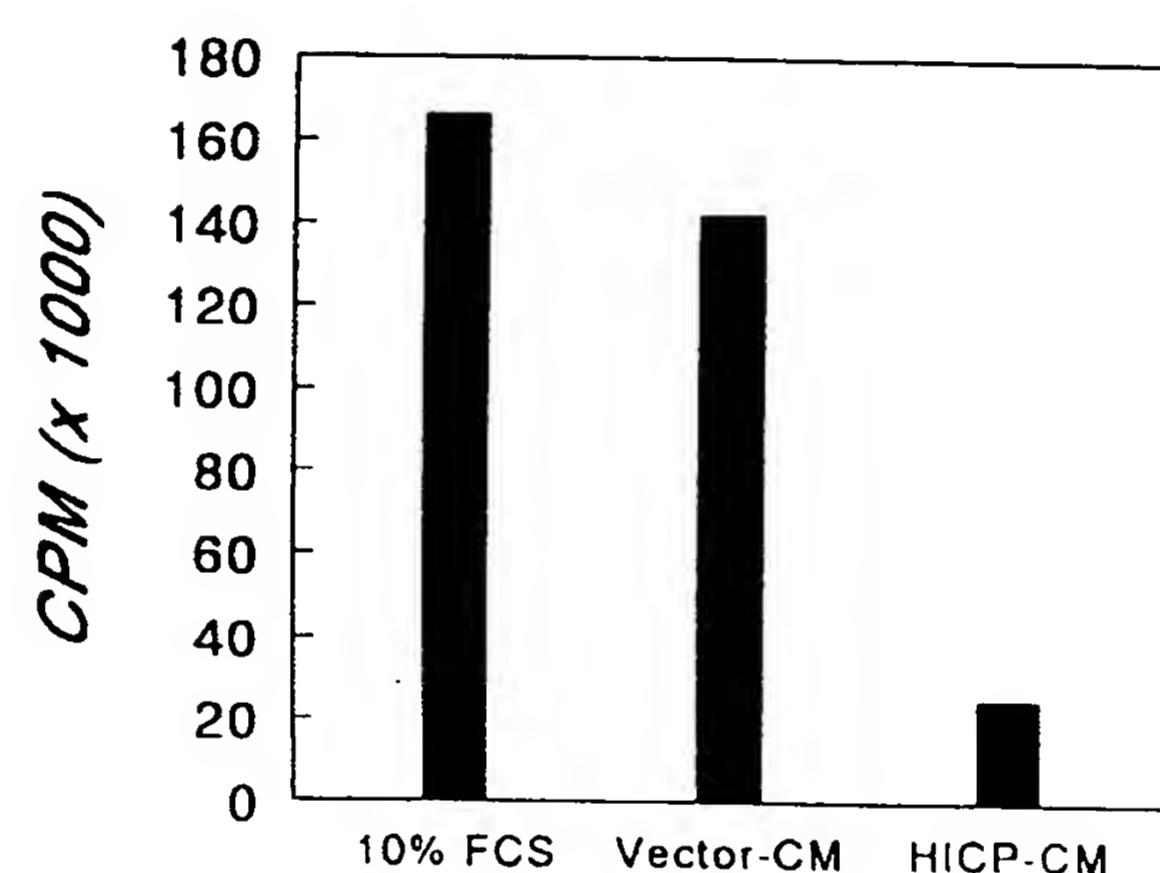


FIGURE 5